

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1-40. (Canceled)

41. (Withdrawn): A packaged formulation for preparing functionalized surfaces having low non-specific binding characteristics suitable for application to a substrate comprising an effective amount of active component, an effective amount of a cross-linking component and an effective amount of matrix forming component, whereby said active component, said cross-linking component and said matrix forming component form an integrally enmeshed matrix that provides a functionalized surface having low non-specific binding characteristics; and instructions to apply the components onto a substrate surface.

42. (Withdrawn): The packaged formulation of claim 41, wherein said active component includes a functional group, a spacer group and a binding group.

43. (Withdrawn): The packaged formulation of claim 42, wherein said functional group facilitates specific analyte binding and is selected from the group consisting of biotin, methoxy-polyethylene glycol, N-hydroxy succinimide esters, nitrophenyl esters, carboxylates, vinyls, nitrenes, aldehyde groups, phenylboronic acid, salicylhydroxamic acid, hydroxyl groups, amine groups, imine groups, carboxylic acids, aldehydes, ketones, esters, ethers, amide groups, imides, cyanides, hydrazides, succinimides, maleimide, thiols, halides, azido groups, phenyl groups, sulfonates, isothiocyanate, isocyanate, oxazolines, epoxides, nitrobenzyls, oxazoline, acid chloride, chloroformate, disulfide pyridyl, azlactone, cyanogens bromide, fluoroarenes, fluorocarbons, disulfides, isocyanides, sulfates, heparin, peptides, nucleotides, polynucleotides, organic silicon compounds and organic phosphate compounds, ethylene glycol oligomers, acrylamides, pyrrolidones, polysaccharides and polar synthetic polymers.

44. (Withdrawn): The packaged formulation of claim 42, wherein said functional group facilitates specific analyte binding and is biotin, methoxy-polyethylene glycol, , succinimidyl propionate, streptavidin, or aldehyde.

45. (Withdrawn): The packaged formulation of claim 42, wherein said functional group facilitates specific analyte binding and is biotin.

46. (Withdrawn): The packaged formulation of claim 42, wherein said spacer group is selected from the group consisting of bifunctional, linear, star-shape, and comb-like polyethylene glycols (PEG oligomers or polymers), polyethylenimines, polystyrene, polysiloxanes, polyurethanes, proteins, poly(amino acids), polypyrrolidones, polyphosphazenes, telechelic surface-active block copolymers (e.g., Pluronics<sup>TM</sup>), polyacrylates, polyacrylamides, polymethacrylates, polysaccharides, saccharide monomers, proetoglycans, glycosaminoglycans, dendrimers, hyperbranched polymers.

47. (Withdrawn): The packaged formulation of claim 42, wherein said spacer group is a linear polyethylene glycol (PEG oligomer or polymer), star-shape PEG molecule, or a comb-like PEG molecule.

48. (Withdrawn): The packaged formulation of claim 42, wherein said spacer group is a linear PEG molecule.

49. (Withdrawn): The packaged formulation of claim 42, wherein said binding group is selected from the group consisting of silanes, methacrylates, SPA, disulfides, disilazanes, sulfhydryls, acrylates, carboxylates, isonitriles, isocyanates. and phosphoamidites, nitrenes, epoxides, hydrosilyl, esters, aranes, azidos, nitriles, quinones, and vinyl groups.

50. (Withdrawn): The packaged formulation of claim 42, wherein said binding group is alkoxysilane or chlorosilane.

51. (Withdrawn): The packaged formulation of claim 42, wherein said binding group is an alkoxysilane.

52. (Withdrawn): The packaged formulation of claim 42, wherein said binding group is SPA.

53. (Withdrawn): The packaged formulation of claim 42, wherein said cross-linking component is a molecule comprised of at least two reactive groups selected from the list consisting of methacrylates, acrylates, epoxides, silanes, perfluorophenyl azides, aryl azides, acyl azides, azidoformates, sulfonyl azides, phosphoryl azides, diazoalkanes, diazoketones, diazoacetates, beta-keto-alpha-diazoacetates, aliphatic azo, diazirines, ketenes, photoactivated ketones, dialkyl peroxidases, diacyl peroxidases, and quinones.

54. (Withdrawn): The packaged formulation of claim 42, wherein said cross-linking component is azido silane.

55. (Withdrawn): The packaged formulation of claim 42, wherein said matrix-forming component is selected from the group consisting of polyoxyethylene-based surface-active substances, including, polyoxyethylene sorbitan tetraoleate, polyoxyethylene sorbitol hexaoleate, polyoxyethylene 6 tridecyl ether, polyoxyethylene 12 tridecyl ether, polyoxyethylene 18 tridecyl ether, Tween<sup>®</sup> surfactants, Triton<sup>®</sup> surfactants, polyoxyethylene-polyoxypropylene copolymers, linear PEG molecules, star-shaped PEG molecules, comb-shaped and dendrimeric, hyperbranched PEG molecules, linear, star, and dendrimer polyamine polymers, carbonated, perfluorinated and siliconated surfactants, and casein, serum dilutions, bovine serum albumin, glycolipids and lipids, heparin, muscin and polysaccharides.

56. (Withdrawn): The packaged formulation of claim 42, wherein said matrix-forming component is polyoxyethylene sorbitan tetraoleate, Tween<sup>®</sup>, surfactant, or Pluronic<sup>®</sup> block co-polymers.

57. (Withdrawn): The packaged formulation of claim 42, wherein said matrix-forming component is polyoxyethylene sorbitan tetraoleate.

58-60. (Canceled)

61. (New): A functional surface having low non-specific binding characteristics for non-target analytes comprising:

a substrate having an effective amount of active component;

an effective amount of cross-linking component;

and an effective amount of matrix-forming component.

62. (New): The functional surface of claim 61, wherein said active component includes a functional group, a spacer group, and a binding group.

63 (New): The active component of claim 62, wherein said functional group is an electrophilically active group.

64. (New): The active component of claim 62, wherein said functional group is an amine-reactive or thiol-reactive group.

65. (New): The active component of claim 62, wherein said functional group is an amine-reactive group.

66. (New): The active component of claim 62, wherein said functional group is an active succinimide ester.

67. (New): The active component of claim 62, wherein said spacer group is a hydrophilic polymer.

68. (New): The active component of claim 62, wherein said spacer group comprises polyethylene glycol.<sup>6</sup>

69. (New): The active component of claim 62, wherein said spacer group comprises linear, star-shape, multi-arm, or comb-like polyethylene glycol.

70. (New): The active component of claim 62, wherein said spacer group comprises linear polyethylene glycol.

71. (New): The active component of claim 62, wherein said spacer group comprises multi-arm polyethylene glycol.

72. (New): The active component of claim 62, wherein said binding group is a silane.

73. (New): The active component of claim 62, wherein said binding group is an alkoxysilane or chlorosilane.

74. (New): The active component of claim 62, wherein said binding group is an alkoxysilane.

75. (New): The functional surface of claim 61, wherein said crosslinking component is an organosilane.

76. (New): The functional surface of claim 61, wherein said crosslinking component is an azidosilane.

77. (New): The functional surface of claim 61, wherein said matrix-forming component is a polyoxyethylene-based surface-active substance.

78. (New): The functional surface of claim 61, wherein said matrix-forming component is surface-active substance comprising polyoxyethylene sorbitan.

79. (New): The functional surface of claim 61, wherein said matrix-forming component is surface-active substance comprising polyoxyethylene sorbitan tetraoleate.

80. (New): The functional surface of claim 61, wherein said active component comprises an electrophilically active group, a hydrophilic polymer, and a silane.

81. (New): The functional surface of claim 61, wherein said active component comprises an amine-reactive group, a polyethylene glycol, and a silane.

82. (New): The functional surface of claim 61, wherein said substrate is a solid surface.

83. (New): The functional surface of claim 61, wherein said substrate is composed of glass, plastic, semiconductors, or metals.

84. (New): The functional surface of claim 61, wherein said substrate is composed of glass or plastic.

85. (New): The functional surface of claim 61, wherein said substrate is composed of glass.

86. (New): A functional surface for performance of a biochemical binding assay comprising:

a substrate;

a non-specific binding matrix affixed to said substrate; and

an active component affixed to said non-specific binding matrix, thereby forming a functional surface for a biochemical binding assay.

87. (New): The functional surface of claim 86, wherein said non-specific binding matrix comprises a crosslinking component and a matrix-forming component providing cross-linked stabilization of the said functional surface and bonding to said substrate.

88. (New): The functional surface of claim 87, wherein said crosslinking component is an organosilane.

89. (New): The functional surface of claim 87, wherein said crosslinking component is an azidosilane.

90. (New): The functional surface of claim 87, wherein said matrix-forming component is a polyoxyethylene-based surface-active substance.

91. (New): The functional surface of claim 87, wherein said matrix-forming component is surface-active substance comprising polyoxyethylene sorbitan.

92. (New): The functional surface of claim 87, wherein said matrix-forming component is surface-active substance comprising polyoxyethylene sorbitan tetraoleate.

93. (New): The functional surface of claim 86, wherein said active component further comprises a functional group, a spacer group, and a binding group, said binding group being affixed to said non-specific binding matrix.

94. (New): The active component of claim 93, wherein said spacer group is a hydrophilic polymer.

95. (New): The active component of claim 93, wherein said spacer group comprises polyethylene glycol.

96. (New): The active component of claim 93, wherein said spacer group comprises linear, star-shape, multi-arm, or comb-like polyethylene glycol.

97. (New): The active component of claim 93, wherein said spacer group comprises linear polyethylene glycol.

98. (New): The active component of claim 93, wherein said spacer group comprises multi-arm polyethylene glycol.

99. (New): The active component of claim 93, wherein said spacer group is a hydrophilic polymer.

100. (New): The active component of claim 93, wherein said spacer group comprises polyethylene glycol.

101. (New): The active component of claim 93, wherein said spacer group comprises linear, star-shape, multi-arm, or comb-like polyethylene glycol.

102. (New): The active component of claim 93, wherein said spacer group comprises linear polyethylene glycol.

103. (New): The active component of claim 93, wherein said spacer group comprises multi-arm polyethylene glycol.

104. (New): The active component of claim 93, wherein said binding group is a silane.

105. (New): The active component of claim 93, wherein said binding group is a alkoxysilane or chlorosilane.

106. (New): The active component of claim 93, wherein said binding group is a alkoxysilane.

107. (New): The functional surface of claim 86, wherein said substrate is a solid surface.

108. (New): The functional surface of claim 86, wherein said substrate is composed of glass, plastic, semiconductors, or metals.

109. (New): The functional surface of claim 86, wherein said substrate is composed of glass or plastic.



Appl. No. 10/718,880  
Amdt. dated August 18, 2004  
Reply to Office action of May 18, 2004  
Attorney Docket No. 1481/US/2  
Express Mail No. EV 447 214 906 US

110. (New): The functional surface of claim 86, wherein said substrate is composed of glass.